



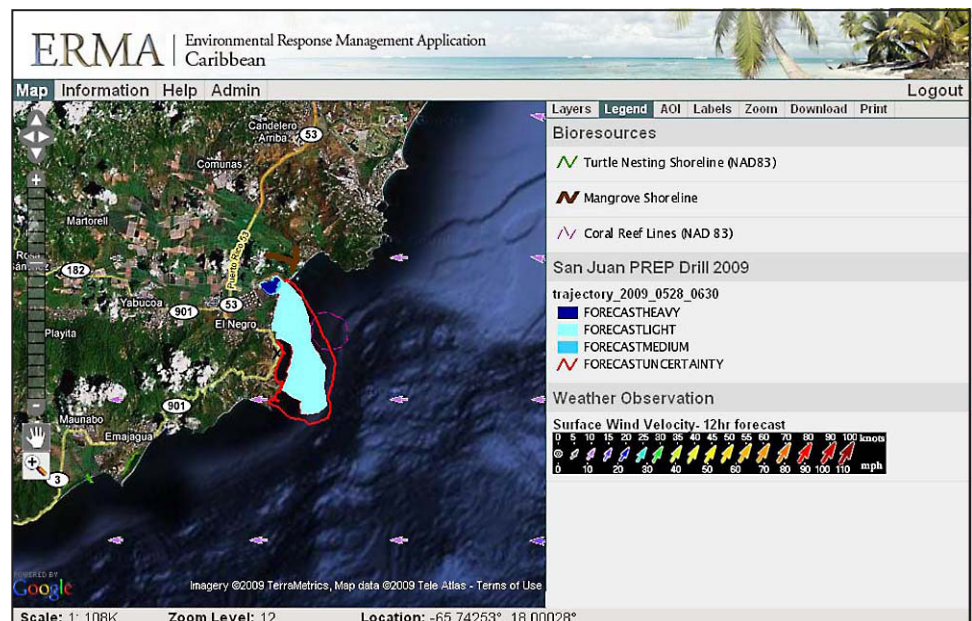
Environmental Response Management Application (ERMA™)

NOOA's Office of Response and Restoration (ORR) and the University of New Hampshire's Coastal Response Research Center (CRRC) led an effort to develop a data platform capable of interfacing diverse spatial datasets into an Internet-based mapping format. The Environmental Response Management Application (ERMA™) was designed to enhance decision-making for hazard responses, such as oil spills. ERMA gives responders and decision makers ready access to specific data useful during spill drills, planning, emergency response, assessment and restoration, as well as for other incidents and natural disasters. ERMA is an integrated data management system that incorporates static base layer data along with real-time streams of data such as weather, tides, and ship tracking data, into a fast and user friendly Geographic Information System (GIS). It is accessible to the command post as well as people in the field and other locations via the internet. ERMA enables a user to quickly and securely upload, manipulate, export, and display spatially referenced datasets, resulting in high-impact and fine resolution visualization of integrated data for solving complex environmental response and resource issues.

The ERMA prototype was developed for the Portsmouth, NH region. Portsmouth was chosen for the prototype because of its proximity to UNH, its diverse shoreline development (e.g., industry, residential, protected habitats, tourist/recreational use), and the active partnership among New Hampshire and Maine response agencies, industry, and non-governmental organizations. Other important features of this region include routine shipments of oil and chemicals through the harbor and Piscataqua River and the presence of the Great Bay

National Estuarine Research Reserve (NERR), the Great Bay National Wildlife Refuge, as well as several other wildlife management areas and conservation easements. Because of its base in Portsmouth, the demonstration project was able to leverage existing resources, data, and expertise that exist as a result of UNH-NOAA partnerships.

The UNH-NOAA resources as well as governmental and private entities provided information including

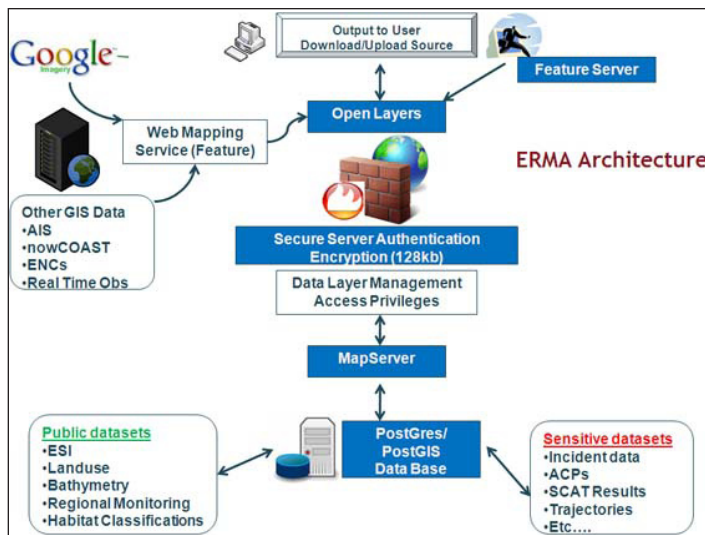


Example output from ERMA representing a hypothetical spill response situation. The platform assembles real-time and static information in a user friendly, fast, and flexible configuration for visualization and data assimilation and delivery.

environmental data and datasets, habitat classifications and species distribution, electronic and raster navigational charts, meteorological observations, and trajectory and forecast models. The Internet-based GIS platform packaged these data in a well-designed data management, visualization, and analysis tool. The ERMA pilot proved to be simple to operate and allowed the user to “drill down” and access specific data sets as well as magnify areas of geographic interest in order to produce detailed customized maps.

The Portsmouth Harbor ERMA pilot was demonstrated at the National Response Team Co-chairs meeting in 2008. The presentation focused on ERMA's unique user and layer access rights, ease of access from field or command post locations, it's fast display of mapped data, and how data could be simply updated or download for other software applications (i.e., ArcGIS or Google Earth). The success of this pilot project led to additional funding from EPA and NOAA. ERMA sites are currently being developed for other regions such as the U.S. Caribbean and Puget Sound, WA.

ERMA is designed to store, query and display spatially referenced data for solving complex environmental resource issues. The application is based on Open Source software (PostGIS, Mapserver, Open Layers) so it has low maintenance costs and ensures compatibility among other GIS applications. By overlaying diverse spatial datasets the user is able to see the full spectrum of an incident and the levels of potential interaction. The web-based nature of the GIS platform is critical as it facilitates the integration and synthesis of various types of information, provides a common operational picture for all individuals involved in a response, and improves communication and coordination among responders and stakeholders. ERMA can provide resource managers with the information necessary to make better informed decisions and the resulting maps are worth a thousand words in communicating the status of response activities.



This diagram represents the basic software architecture and data flow for ERMA.

Partners

UNH-NOAA Centers

Coastal Response Research Center
 Cooperative Institute for Coastal and Estuarine Environmental Technology
 Center for Coastal Ocean Observing and Analysis
 Earth Systems Data Collaborative
 Joint Hydrographic Center
 Research Computing Center

NOAA Offices and Programs

Office of Response & Restoration
 nowCOAST
 Marine Debris Program
 Office of Coast Survey
 National Centers for Coastal Ocean Science
 National Environmental Satellite, Data, and Information Service
 National Weather Service
 National Marine Fisheries
 Integrated Ocean Observing System
 Regional Teams

Other

U.S. Coast Guard
 U.S. EPA
 U.S. Fish and Wildlife Service
 U.S. National Parks Service
 ME Dept. Environmental Protection
 NH Dept. Environmental Services
 Puerto Rico Dept. Natural Resources & Environmental Quality Board
 The Nature Conservancy
 Piscataqua River Cooperative
 Portsmouth Naval Shipyard
 Florida Fish and Wildlife Research Institute
 Virgin Islands Department Natural Resources

ERMA supports NOAA's mission and national priorities of hazard resilient coastal communities, integrated ecosystem assessments, integrated water resource services, and outreach and communication. The many NOAA and regional contributors in this initiative exemplify NOAA's emphasis on blending national and regional priorities.

NOAA's Office of Response & Restoration—Protecting our Coastal Environment

For further information about NOAA's Office of Response and Restoration,
 please call (301) 713-2989 or visit our Web site at
response.restoration.noaa.gov

